

Camera Control Unit

Operating Instructions Page 2

GB

Mode d'emploi Page 18

FR

**CCU-M5A
CCU-M5AP**

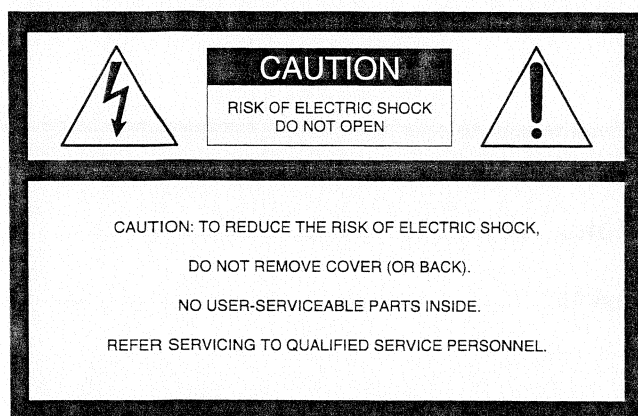
WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

WARNING

THIS APPARATUS MUST BE EARTHED.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Owner's Record

The model and serial numbers are located at the rear. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. _____ Serial No. _____

For the customers in the USA (CCU-M5A)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

For the customers in Europe (CCU-M5AP)

This product with the CE marking complies with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European standards:

- EN60065: Product Safety
- EN55103-1: Electromagnetic Interference (Emission)
- EN55103-2: Electromagnetic Susceptibility (Immunity)

This product is intended for use in the following Electromagnetic Environment(s):

E1 (residential), E2 (commercial and light industrial), E3 (urban outdoors) and E4 (controlled EMC environment, ex. TV studio).

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Overview

Product Features

The CCU-M5A/M5AP is a camera control unit that works with various color video cameras including DXC-327B series, DXC-D35 series, DXC-D35WS series, DXC-D30 series, and DXC-D30WS series via the camera adaptor such as CA-537/537P. The features of this product are described below.

Remote adjustment of camera operating parameters

The unit allows you to remotely set camera parameters, such as the automatic or manual settings of white balance, black balance, and lens iris, the gain level of the video amplifier, and the pedestal level.

Support of various input and output signals

In addition to conventional composite video signals (VBS), the unit outputs component video signals and S-video signals (RGB video signal output can be selected through an output switch on the rear of the unit). An input connector for an external sync signal is also provided.

Built-in cable compensation circuit

A built-in circuit provides compensation for bandwidth loss that occurs during transmission through high-frequency components and for drops in signal level for cable extensions of up to 300 meters (about 999 feet). In the case of composite video signals (VBS), fine adjustment can be done independently for the luminance signal and chrominance signal, respectively.

Return video and teleprompter signals

The unit allows the input and monitoring in the camera's viewfinder of return video signals from a special effects generator or control console, and provides connectors for the reception and relay of teleprompter signals.

Tally/intercom function

A tally/intercom function allows the operator of the control unit, the camera person, and the control console operator to communicate with one another.

Rack mounting

The unit can be mounted in a standard EIA 19-inch rack.

Functions Using the CCU-M5A/CCU-M5AP

Output signals

Camera or camera and camera adaptor	Output signal			
	VBS	RGB	S-video	Y/R-Y/B-Y
DXC-D35/D35P with CA-537/537P	Yes	Yes	Yes	Yes
DXC-D30/D30P with CA-537/537P	Yes	Yes	Yes	Yes
DXC-637/637P with CA-537/537P	Yes	Yes	Yes	Yes
DXC-537A/537AP with CA-537/537P	Yes	Yes	Yes	Yes
DXC-327B/327BP with CA-537/537P	Yes	Yes	Yes	Yes
DXC-950/950P	Yes	Yes ^{a)}	Yes ^{b)}	No
DXC-9000/9000P	Yes	Yes ^{a)}	Yes ^{b)}	No

a) When the CCTZ-3RGB or CCTQ-3RGB camera cable is used.

b) When the CCTZ-3YC camera cable is used.

Items to be adjusted

Camera	Items to be adjusted			
	DETAIL	SHUTTER	C.SCAN	KNEE
DXC-D35/D35P	Yes	Yes	Yes	Yes
DXC-D30/D30P	Yes	Yes	Yes	Yes
DXC-637/637P	Yes	Yes	Yes	Yes
DXC-537A/537AP	Yes	Yes	No ^{a)}	No ^{b)}
DXC-327B/327BP	Yes	Yes	No	No ^{b)}
DXC-950/950P	Yes	Yes	Yes	No
DXC-9000/9000P	Yes	Yes	Yes	No

- a) Clear Scan function can be used on the camera.
b) The figures displayed on the monitor screen change but adjustments cannot be made.

Return video signal and teleprompter signal output

Camera adaptor	Return video signal output	Teleprompter signal output
CA-537/537P ^{a)}	Yes	Yes
CA-537/537P ^{b)}	No ^{c)}	No

- a) Serial number 20891 and higher (CA-537) or 52201 and higher (CA-537P)
b) Serial number 20890 and lower (CA-537) or 52200 and lower (CA-537P)
c) To output the return video signal, change the setting of an internal switch in the unit. For details, consult your Sony dealer or service personnel.

Length of the camera cable

When the CCZ-An camera cable is used

When an optional CCZ-An (n means the cable length in meters) camera cable is used, the cable can be extended up to 300 meters (about 999 feet). To extend the cable, set the CABLE COMP selector on this unit to the appropriate position according to the length of the cable to be used.

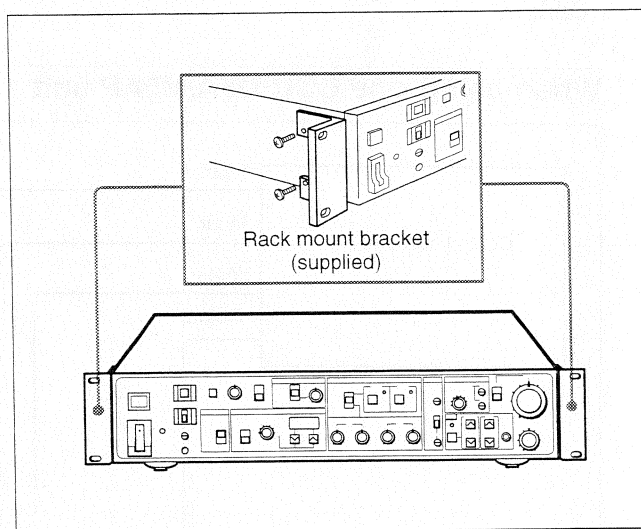
When the CCQ-nAM camera cable is used

When the CCQ-nAM camera cable is used, the maximum cable length is 100 meters (about 333 feet).

Rack Mounting

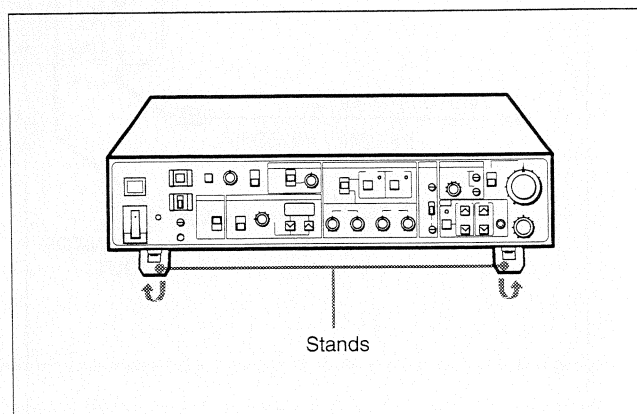
When the rack mount brackets (supplied) are attached to the CCU-M5A/M5AP, the unit can be mounted in a 19-inch standard rack.

For details on rack mounting, consult your Sony dealer or service personnel.



How to Use the Stands

Stands are provided on the bottom of the CCU-M5A/M5AP. When the unit is used on a table, turning the stands as shown below will allow easy operation.



Overview

Connections

Examples of how to connect other devices to this unit are shown in the following.

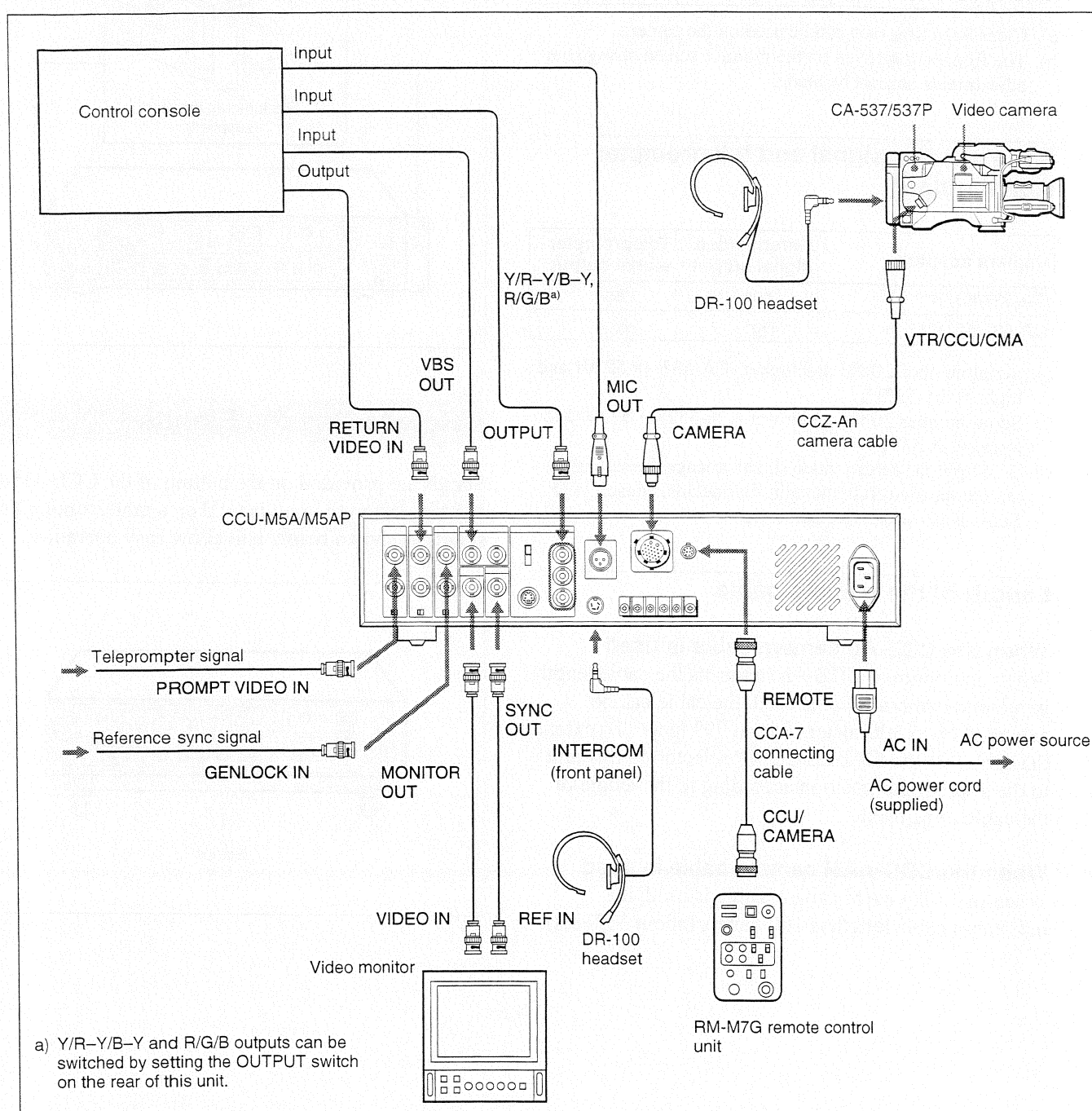
Notes

- Be sure to turn off the power to the CCU-M5A/M5AP before connecting or disconnecting the camera cable.

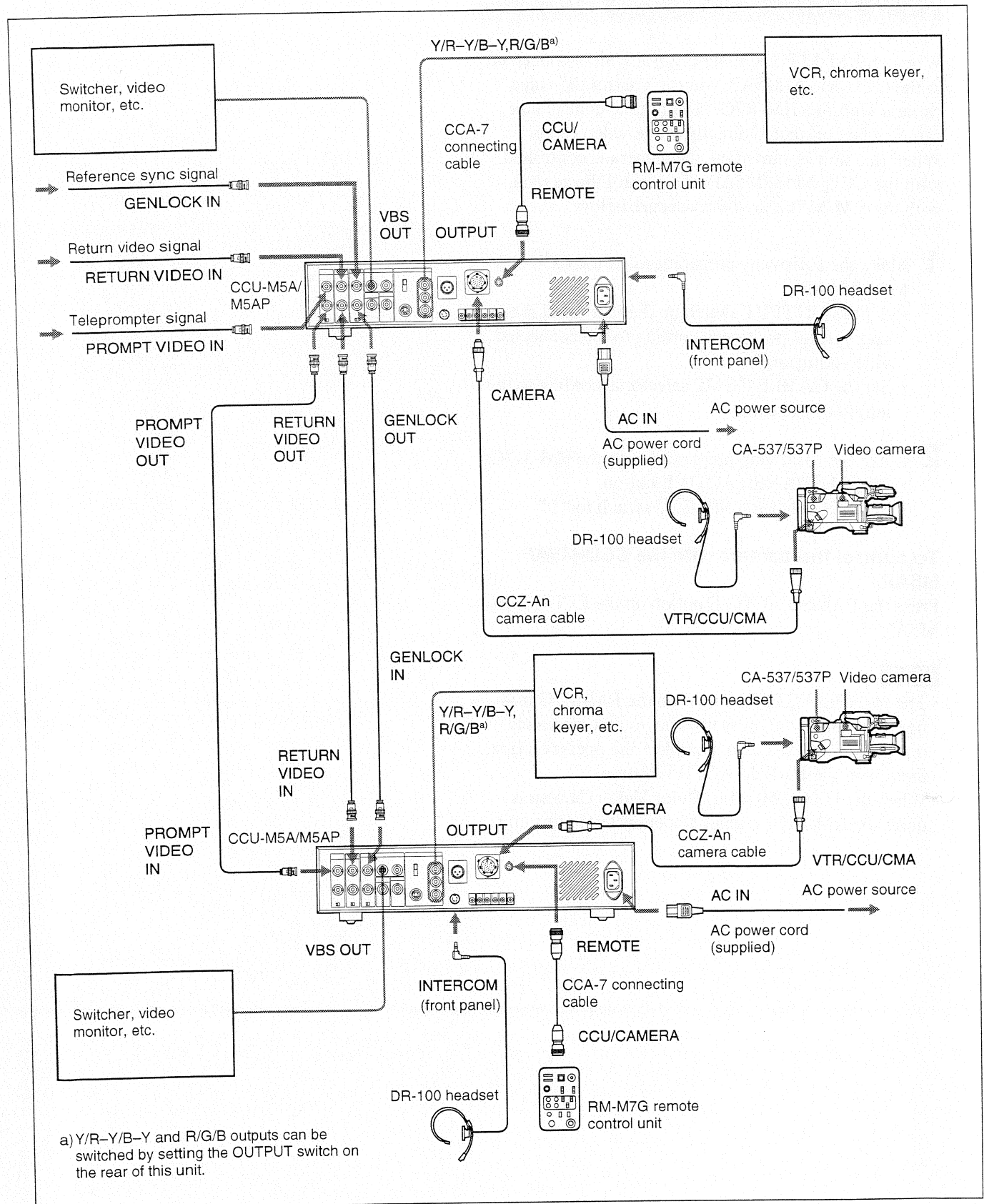
- Some of the video camera's switches and buttons may not operate while the CCU-M5A/M5AP is connected to it.

For details, see the operation instructions for the video camera or camera adaptor.

When using one CCU-M5A/M5AP unit



When using two CCU-M5A/M5AP units



Overview

When Using an RM-M7G Remote Control Unit

When an RM-M7G Remote Control Unit is connected to the CCU-M5A/M5AP, you can control the video camera with the RM-M7G. The remote control unit can also be connected directly to the video camera. When this unit is turned on, the camera is controlled with the CCU-M5A/M5AP. To control the camera with the RM-M7G, do the procedure below:

- 1** Make the following preparations on the CCU-M5A/M5AP:
 - Set the OUTPUT switch on the rear panel to the appropriate position according to the connected video equipment.
 - Set the CABLE COMP selector according to the length of the cable.
- 2** Make the following preparations on the RM-M7G:
 - Press the PANEL ACTIVE button.
 - Set the CAMERA SELECT switch to "1."

To control the camera with the CCU-M5A/M5AP

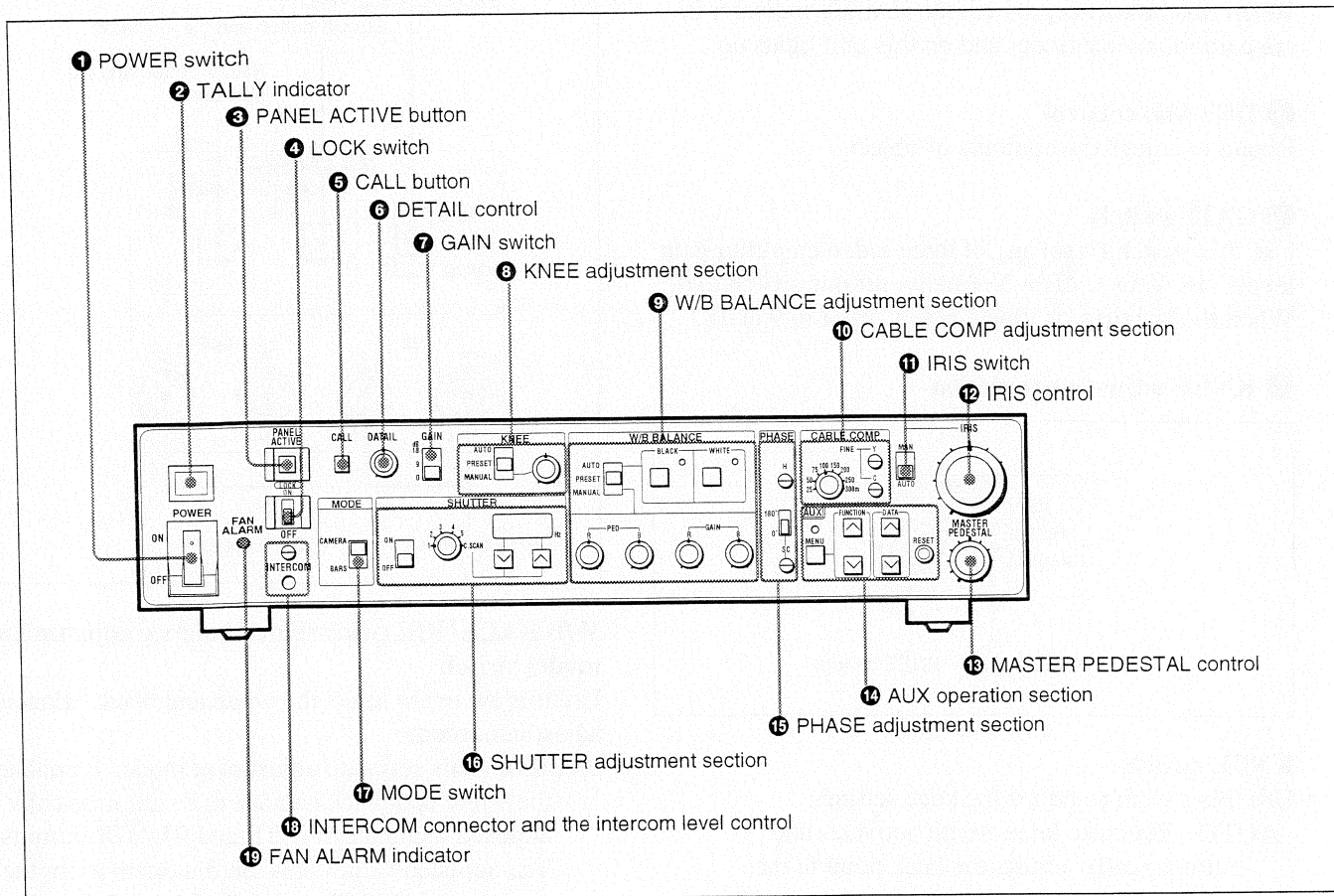
Press the PANEL ACTIVE button on the CCU-M5A/M5AP.

Notes

- The PANEL ACTIVE button on the RM-M7G may not function if you press it while you are operating this unit. In such a case, complete the operation first, then press the PANEL ACTIVE button.
- When the DXC-950 series Color Video Camera is used, the RM-M7G cannot be connected to this unit.

Location and Function of Parts

Front Panel



1 POWER switch

This switches the power to this unit on or off.

ON: Turns on the power.

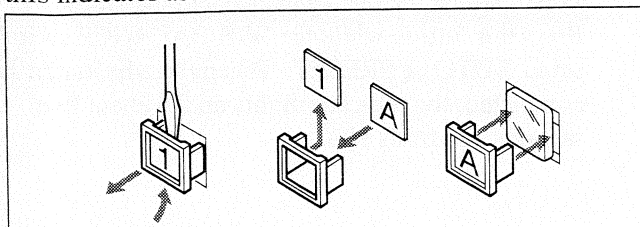
OFF: Turns off the power.

2 TALLY indicator

Lights red when a red tally signal is received (i.e., the video camera connected to this unit is selected on the control console or the special effects generator).

The indicator also lights red when the CALL button is pressed on the video camera or this unit.

The camera number plate (supplied) can be attached to this indicator as follows.



3 PANEL ACTIVE button

When the video camera connected to this unit is being controlled by more than one device (e.g., another CCU-M5A/M5AP Camera Control Unit or a RM-M7G Remote Control Unit), pressing this button causes this button to light up and to assume control of the camera. The controls on this unit operate while the button is lit.

When the PANEL ACTIVE button on another camera control device is pressed, the button on this unit turns off and its control of the camera stops.

4 LOCK switch

Use this switch to lock or unlock the controls on this unit.

ON: All controls (except the CALL button, INTERCOM level control, CABLE COMP control, and FINE control) are locked.

OFF: All controls are unlocked. Keep the switch in this position under normal conditions.

Location and Function of Parts

5 CALL button

Press to call the camera operator over the intercom. When this button is pressed, the TALLY indicator in the camera's viewfinder and on this unit lights up.

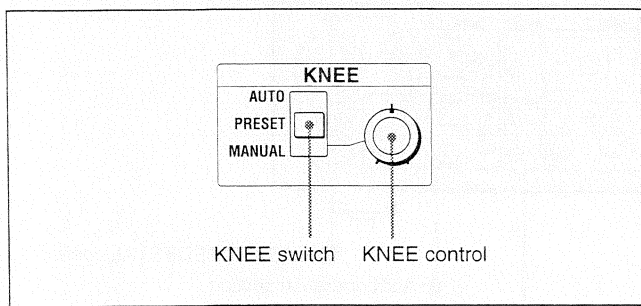
6 DETAIL control

Rotate to adjust the contours of objects.

7 GAIN switch

Use this switch to set any of three video amplifier gain levels (18, 9, or 0 dB). Normally, set this switch to 0. When the lighting on object is low, set it to 9 or 18.

8 KNEE adjustment section



KNEE switch

Use this switch to adjust the knee setting.

AUTO: The auto knee circuit activates and automatically adjusts the knee point to the optimum level.

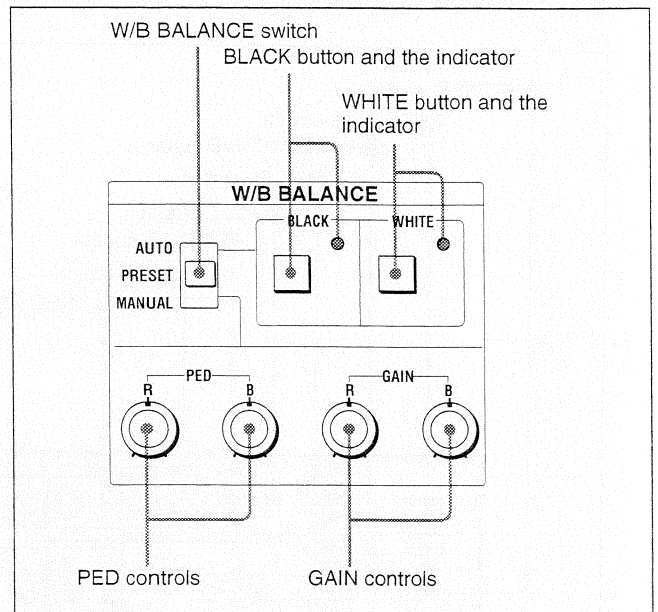
PRESET: Knee point is adjusted to factory-preset level.

MANUAL: Knee point can be set manually using the KNEE control.

KNEE control

When the KNEE switch is set to MANUAL, rotate this control to set the knee point.

9 W/B BALANCE adjustment section



W/B BALANCE (white/black balance adjustment mode) switch

Use this switch to select the white and black balance adjustment mode.

AUTO: This sets auto adjustment mode. It enables the white and black balance to be automatically adjusted using the WHITE and BLACK buttons. The adjusted values are stored in memory in the camera and are called up when the switch is set to this position again.

PRESET: This sets preset mode. The camera operates with the factory-preset white balance (i.e., white balance adjusted for iodine lamps (color temperature 3200 K) with the FILTER selector of the camera set to "1" position).

MANUAL: Sets manual adjustment mode. It enables the white and black balance to be manually adjusted using the PED and GAIN controls.

BLACK (black balance automatic adjustment) button and the indicator

Use to adjust the black balance automatically. Press this button while the W/B BALANCE switch is set to AUTO or PRESET. When the adjustment is completed, the indicator lights up for about five seconds and turns off.

WHITE (white balance automatic adjustment) button and the indicator

Use to adjust the white balance automatically.
Press this button while the W/B BALANCE switch is set to AUTO. When the adjustment is completed, the indicator lights up for about five seconds and turns off.

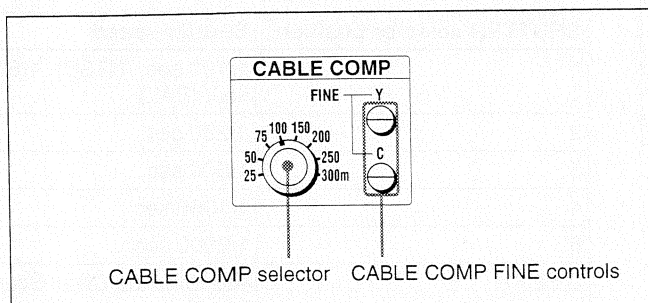
PED (pedestal level) controls

Use to adjust the pedestal level.
Rotate these controls while the W/B BALANCE switch is set to MANUAL. The R control adjusts the red component and the B control adjusts the blue component.

GAIN (video gain) controls

Use to adjust the video output level.
Rotate these controls while the W/B BALANCE switch is set to MANUAL. The R control adjusts the red component and the B control adjusts the blue component.

10 CABLE COMP adjustment section



CABLE COMP (cable compensation) selector

Set this selector to the position according to the length of the camera cable to be used. The internal cable compensator performs compensation according to the position of this selector to eliminate signal degradation. Set the selector to "25" when the camera cable length is 10 meters (about 33 feet) or less.

CABLE COMP FINE (cable compensation fine adjustment) controls

These controls are for fine adjustment of the cable compensation level of the video signal output from the VBS OUT connectors.
If fine adjustment is required after setting the CABLE COMP selector, rotate these controls using a screwdriver. The Y control adjusts the Y (luminance) signal level and the C control adjusts the C (chrominance) signal level.

11 IRIS (iris adjustment mode) switch

Use this switch to select the iris adjustment mode. Be sure that the IRIS switch on the video camera is set to AUTO.

MAN: Iris is adjusted manually with the iris adjustment control.

AUTO: Iris is automatically adjusted.

12 IRIS (iris adjustment) control

When the IRIS switch is set to MAN, rotate this control to manually adjust the iris.

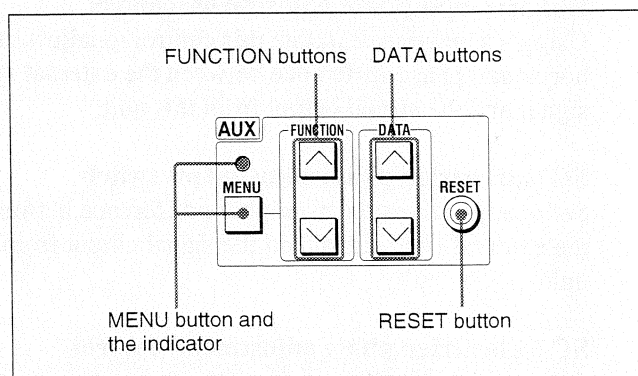
When the IRIS switch is set to AUTO, rotate this control to manually fine-tune the automatic iris adjustment.

13 MASTER PEDESTAL (master pedestal level adjustment) control

Use to adjust the master pedestal (master black) level setting. The master pedestal level is normally not stored in the camera. However, when the DXC-M7/M7P Color Video Camera is connected, the master pedestal level can be stored by setting an internal switch in the camera.

For details, refer to the operation manual of the video camera.

14 AUX (auxiliary) operation section



MENU button and the indicator

When this button is pressed, the indicator lights up and the menu items that are adjusted by the FUNCTION, DATA, and RESET buttons appear on the monitor connected to the MONITOR OUT connector. Pressing this button again turns the indicator off and causes the current settings made on the unit to appear on the monitor. Press this button again to make this information to disappear.

Location and Function of Parts

FUNCTION buttons

Use these buttons to move the arrow cursor up and down to specific menu items displayed on the monitor.

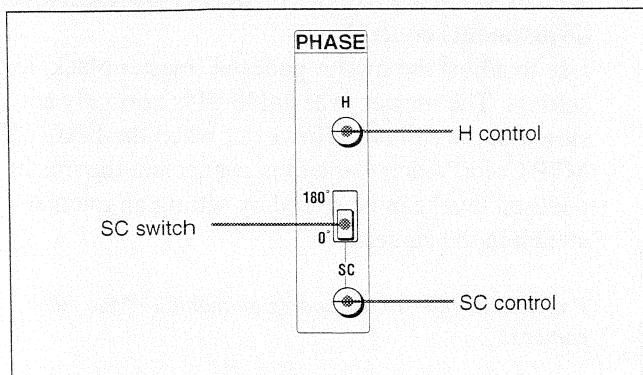
DATA buttons

Use these buttons to change the setting of displayed menu items that have been selected by the FUNCTION buttons.

RESET button

Press this button to reset menu items that have been selected by the FUNCTION buttons to their factory settings.

15 PHASE adjustment section



H (horizontal phase adjustment) control

Using a screwdriver, rotate this control to adjust the horizontal phase difference between the external sync signal and the signal output from this unit.

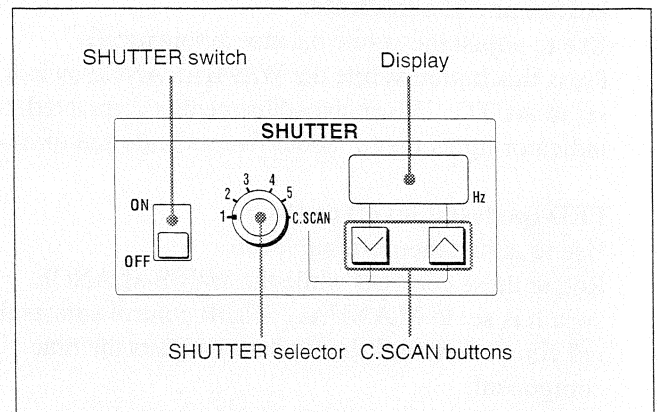
SC (subcarrier phase adjustment) switch

Set to adjust the subcarrier phase difference between the external sync signal and the signal output from this unit.

SC (subcarrier phase adjustment) control

After setting the SC switch to the appropriate position, rotate this control using a screwdriver to make fine adjustment of the subcarrier phase difference.

16 SHUTTER adjustment section



SHUTTER switch

Use to activate or deactivate the electronic shutter.

ON: Activates the electronic shutter.

OFF: Deactivates the electronic shutter.

SHUTTER selector

Use to select the speed of electronic shutter.

SHUTTER selector position	Shutter speed
1	1/100 sec. (NTSC), 1/60 sec. (PAL)
2	1/250 sec.
3	1/500 sec.
4	1/1000 sec.
5	1/2000 sec.
C.SCAN	Activates the Clear Scan function.

C.SCAN (Clear Scan) buttons

When the SHUTTER switch is set to C.SCAN, press these buttons repeatedly to select the Clear Scan frequency. If the SHUTTER switch is set to ON, the setting is stored in memory and retained even the power of this unit is turned off.

Display

Displays the selected shutter speed or Clear Scan frequency. "OFF" is displayed when the SHUTTER switch is set to OFF.

17 MODE switch

Use to select the video signal to be output from this unit.

CAMERA: Image being shot via video camera

BARS: Color bars generated by this unit

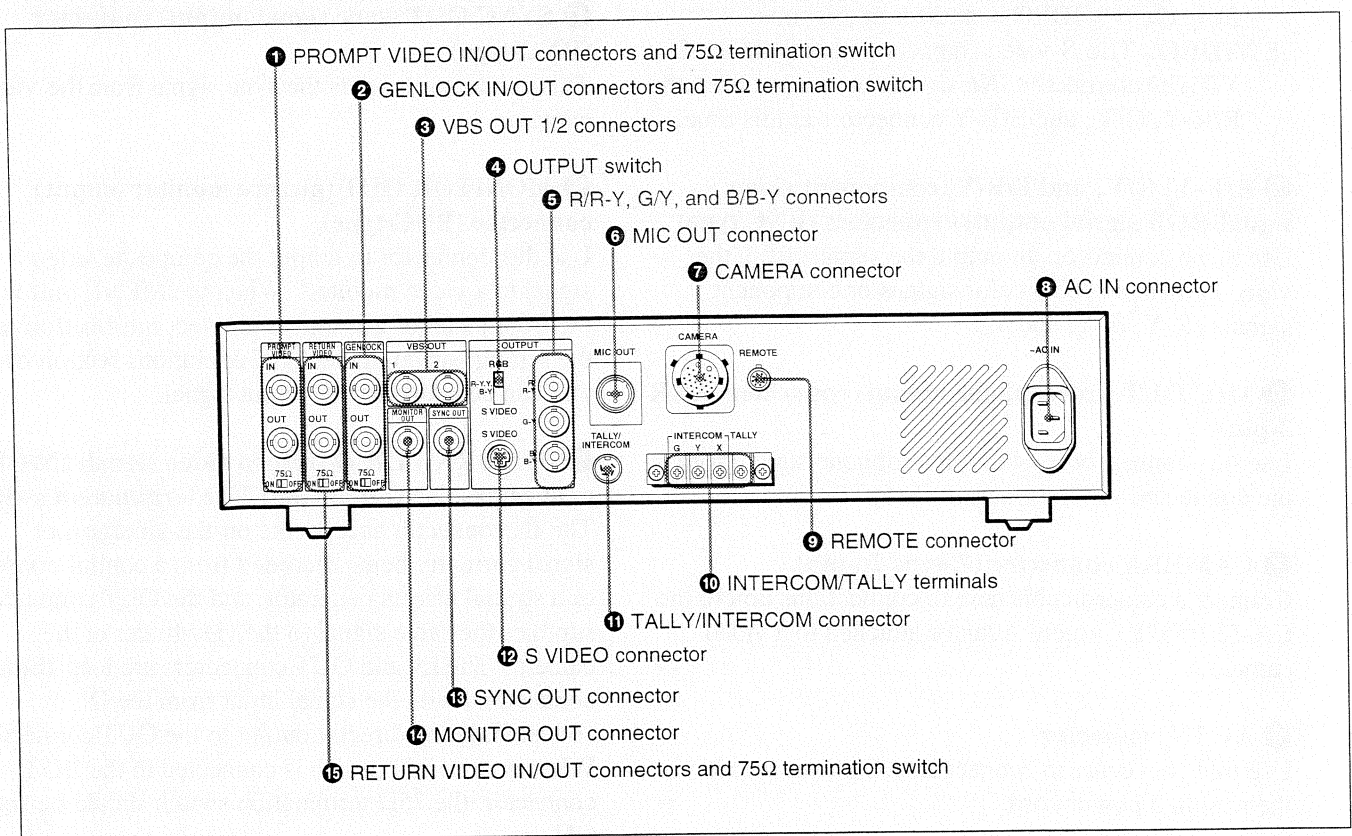
18 INTERCOM connector (minijack) and the intercom level control

Connect the DR-100 Headset to this connector and rotate the intercom level control with a screwdriver to adjust the intercom level.

19 FAN ALARM indicator

A cooling fan is built into this unit. If the fan should fail, this indicator flashes. Immediately switch off the power, and consult your Sony dealer or service personnel for repair. Continuing to use the unit when the fan is defective may shorten the life of the equipment.

Rear Panel



1 PROMPT VIDEO (teleprompter video signal) IN/OUT connectors (BNC type) and 75Ω termination switch

The IN connector accepts the teleprompter video signal. The IN and OUT connectors are loop-through and the signal input from the IN connector is directly output to the OUT connector.

When no external device is connected to the OUT connector, set the 75Ω termination switch to ON.

2 GENLOCK (generator lock) IN/OUT connectors (BNC type) and 75Ω termination switch

The IN connector accepts the reference sync signal (black burst signal or composite video signal) for external synchronization. The IN and OUT connectors are loop-through and the signal input from the IN connector is directly output to the OUT connector.

When no external device is connected to the OUT connector, set the 75Ω termination switch to ON.

3 VBS (composite video signal) OUT 1/2 connectors (BNC type)

Use these connectors to output signals from a video camera as composite video signals. The same signal is output from both 1 and 2 connectors.

Location and Function of Parts

④ OUTPUT switch

Use this switch to select the type of the signal to be output from the R/R-Y, G/Y, B/B-Y connectors or the S VIDEO connector.

R/G/B: The R, G, and B color signals are output from the R/R-Y, G/Y, and B/B-Y connectors, respectively. No signal is output from the S VIDEO connector at this time.

R-Y, Y, B-Y: The R-Y, Y, and B-Y component signals are output from the R/R-Y, G/Y, and B/B-Y connectors, respectively. No signal is output from the S VIDEO connector at this time.

S VIDEO: The S-video signal is output from the S VIDEO connector. No signals are output from the R/R-Y, G/Y, and B/B-Y connectors at this time.

⑤ R/R-Y, G/Y, and B/B-Y (component video signal/RGB signal output) connectors (BNC type)

Use these connectors to output the signals from the video camera as RGB color signals or component signals (R-Y, B-Y, and Y).

⑥ MIC OUT (microphone output) connector (XLR 3-pin)

Use this connector to output microphone signal from the connected video camera.

⑦ CAMERA connector (Z-type 26-pin)

Connect a camera cable here to connect this unit to the CA-537/537P Camera Adaptor attached to a video camera.

⑧ AC IN connector

Use this connector to connect an AC power source via the supplied power cord.

⑨ REMOTE (remote control unit) connector (10-pin)

Use this connector to connect the RM-M7G Remote Control Unit using a CCA-7 connecting cable (not supplied).

⑩ INTERCOM/TALLY terminals (screw terminals)

Use these terminals to connect an intercom system which cannot be connected to ⑪ TALLY/INTERCOM connector (DIN 4-pin).

⑪ TALLY/INTERCOM connector (DIN 4-pin)

Intercom signals and tally signals are input and output via this connector. Connect to the intercom system's INTERCOM/TALLY connector using a CCDD-2.5 tally/intercom cable (not supplied).

⑫ S VIDEO (S-video signal output) connector (mini DIN 4-pin)

Use this connector to output S-video signal from the video camera.

⑬ SYNC OUT (sync signal output) connector (BNC-type)

This connector outputs the sync signal from the video camera.

⑭ MONITOR OUT (picture monitor output) connector (BNC-type)

Use this connector to output the composite video signal to a video monitor. When the MENU button on the front panel of this unit is pressed, information on the settings made in the AUX operations section of this unit can be added to the output signal.

⑮ RETURN VIDEO (return video signal) IN/OUT connectors (BNC type) and 75Ω termination switch

The IN connector accepts the on-the-air signal or signal currently being recorded from a control console or a special effects generator, and the OUT connector supplies the same signal to the viewfinder of the camera. The IN and OUT connectors are loop-through connectors, with the signal input from the IN connector being directly output to the OUT connector. When no external device is connected to the OUT connector, the 75Ω termination switch should be set to ON.

Notes

- When the return video signal is input from the RETURN VIDEO IN connector, be sure to input the sync signal from the GENLOCK IN connector.
- The signal input from the RETURN VIDEO IN connector must be synchronized with the signal input from the GENLOCK IN connector. Otherwise, camera synchronization may be unstable.

Notes on Use

Use and storage locations

Avoid using or storing the unit in the following places:

- Where it is subject to extremes of temperature.
- Near a heat source, such as a radiator or an air duct, or in a place subject to direct sunlight. (Note that in summer the temperature in a car with the windows closed can reach 50°C (122°F).)
- Very damp or dusty places.
- Where rain is likely to reach the unit.
- Places subject to severe vibration.
- Near strong magnetic fields
- Near transmitting stations generating strong radio waves.

Avoid violent impacts

Dropping the unit, or otherwise imparting a violent shock to it, is likely to cause it to malfunction.

Do not cover with cloth

While the unit is in operation, do not cover it with a cloth or other material. This can cause the temperature to rise, leading to a malfunction.

After use

Turn the unit off.

Care

If the body of the unit is dirty, wipe it with a dry cloth. For severe dirt, use a soft cloth steeped in a small amount of neutral detergent, then wipe dry. Do not use volatile solvents such as alcohol or thinners, as these may damage the finish.

Regarding the transport of this unit

Keep the original carton and associated packing material, and use them when transporting the unit. During transport, do not subject the unit to strong shocks.

Specifications

General

Power requirements

CCU-M5A: 100 to 120 V AC,
60 Hz
CCU-M5AP: 220 to 240 V AC,
50 Hz

Rated maximum load to camera

2.5 A, 12 V (at receiving end)

Power consumption

88 W

Operating temperature

5°C to 40°C (41°F to 104°F)

Peak inrush current

- (1) Power ON, current probe method: 84 A (240 V)
- (2) Hot switching inrush current, measured in accordance with European standard EN55103-1: 16 A (230 V)

Dimensions (w/h/d, excluding protruding parts)

424 × 88 × 283 mm (16 ³/₄ × 3 ¹/₂ × 11 ¹/₄ inches)

Mass

About 6.6 kg (14 lb 9 oz)

Output connectors

VBS OUT 1/2	BNC type (1 each) VBS: 1.0 Vp-p, negative-sync, 75 Ω, unbalanced
S VIDEO	Mini DIN 4-pin (1) Y: 1.0 Vp-p, negative-sync, 75 Ω, unbalanced C: 286 mV (CCU-M5A)/300 mV (CCU-M5AP) (burst), no sync
Y/R-Y, G/Y, B/B-Y	BNC type (1 each) (switchable) R, G, B: 0.7 Vp-p, 75 Ω Y: 1.0 Vp-p, negative-sync, 75 Ω, unbalanced R-Y/B-Y: 0.7 Vp-p (CCU-M5A)/525 mVp-p (CCU-M5AP), 75 Ω, unbalanced
SYNC OUT	BNC type (1) 4 Vp-p, 75 Ω, negative polarity
MONITOR OUT	BNC type (1) VBS: 1.0 Vp-p, negative-sync, 75 Ω, unbalanced
MIC OUT	XLR 3-pin, male (1)

Input/output connectors

GENLOCK IN/OUT

BNC type (1 each, loop-through)
VBS (1.0Vp-p) or black burst (0.45 Vp-p), with a 75 Ω termination switch

CAMERA

26-pin (1)

TALLY/INTERCOM

DIN 4-pin

INTERCOM/TALLY

Screw terminals (4)

INTERCOM

Minijack (1)

REMOTE

10-pin (1)

RETURN VIDEO IN/OUT

BNC type (1 each, loop-through)
VBS (1.0Vp-p) with a 75 Ω termination switch

PROMPT VIDEO IN/OUT

BNC type (1 each, loop-through)
VBS (1.0Vp-p) with a 75 Ω termination switch

Adjustable items

Iris	Automatic/manual
White balance	Automatic/manual/preset R/B component levels adjustable
Black balance	Automatic/manual R/B component levels adjustable
Video amplifier gain level	
Master pedestal level	
Knee point	Automatic/manual/preset
Detail level	
Electronic shutter speed	
Clear Scan	
Video output signal selection	Camera/color bar
Tally/intercom level	
SC phase	
H phase	
Cable compensation	

Accessories supplied

Rack mount brackets (2)
Screws for rack mounting (4)
AC power cord (1)
Number plates (1 set)
Operation Manual (1)
Warrenty card (1)

Optional accessories

Color video camera

DXC-D35/D35P, DXC-D35WS/
D35WSP, DXC-D30/D30P,
DXC-D30WS/D30WSP,
DXC-637/637P, DXC-537A/
537AP, DXC-327B/327BP,
DXC-950/950P, DXC-9000/9000P

Studio system devices

Remote control unit

RM-M7G

Headset

DR-100

Camera cable

CCZ-A2 (2 meters, about 7 feet),
CCZ-A5 (5 meters, about 17 feet),
CCZ-A10 (10 meters, about 33
feet), CCZ-A25 (25 meters, about
83 feet), CCZ-A50 (50 meters,
about 166 feet), CCZ-A100 (100
meters, about 333 feet)

Extension adaptor for CCZ-A series camera cable

CCZZ-1B (fixed on the wall),
CCZZ-1E

Tally/intercom cable

CCDD-2.5

Design and specifications are subject to change
without notice.